

Location #1: On the shore of Haskell Lake between locations of VAS-11 and VAS-01. Approx. 1,990,325 Easting, 272,240 Northing. Cluster of 3 wells, with one at the water table, one at a depth presumed to correspond with the vertical core of the plume (~elevation of 1,525 to 1,530 feet above MSL, based on VAS-11 and MW-16 well cluster), and one at the bedrock contact (~elevation 1,515 to 1,520).

Purpose: To better define influx into lake and to confirm/monitor the western plume margin.

Location #2: On the shore of Haskell Lake midway between the locations of VAS-02 and VAS-03. Approx. 1,990,520 Easting, 272,200 North. Anticipated rig accessibility issues, so install as close as possible to this location. Cluster of 3 wells, with one at the water table, one at a depth presumed to correspond with the vertical core of the plume (~elevation of 1,545 to 1,540) feet above MSL, and one at the bedrock contact (~elevation 1,525 to 1,530).

Purpose: To better define the influx into Haskell Lake.

Location #3: MIP results indicate a data gap exists between MW-18 and MW-19 well nests. Installing intermediate and deep well depths midway between MW-18 and MW-19 would fill this data gap. Note that these locations may also serve as replacements to the MW21 nest, should they be removed during interim action, allowing post remedial evaluation through expected core of plume. Initial logging of this mid-plume footprint area of the site would be ideal, to best determine optimal screen settings. Using available information, the location for the two wells between MW-18 and MW-19 would be comprised of wells screened from ~elevations of 1,545 to 1,550 and 1,530 to 1,535. A deeper well atop bedrock is deemed less crucial for this location.

Purpose: Enable monitoring of potential groundwater discharge to the pond, and fill in data gap between two apparent groundwater plume hot spots upgradient and downgradient.

Location #4: At the location of VAS-02. Three depths based ideally on a logged boring for optimal screen design, as no direct stratigraphy data has been gathered for the Haskell Lake shoreline area of the site. Using available information, the wells would be screened from ~elevations of 1,540 to 1,545, bedrock surface (~1510-1515), and at the water table.

Purpose: Fill data gap between two groundwater plumes and to assess and monitor the plume interior as it migrates beneath the lake.

Location #5: Near BH7, the approximate SW corner of the former UST basin closest to the former RW-1/RW-4 locations. Three depths ideally based on a logged stratigraphy boring. Based on available information, screen settings would be the water table plus ~elevations 1,545 to 1,550 and 1,530 to 1,535.

Purpose: Investigate where NAPL would most likely be present at high enough transmissivity to enter monitoring well screens. This would also serve as a long term monitoring well as well as post remedial monitoring well.

Location #6: Location MW22 Well Nest. One Mid-Depth well and one Bedrock Surface Well. This location is likely downgradient from the pump island and piping area. A cross-section shows that the MW22 well nest is screened above and below the plume. Continuous core logged boring would be ideal, but based on available information, the screen settings would be ~elevation 1,550 to 1,555 and ~elevation 1515-1520

Purpose: Defining the western plume margin, intercepting the plume between the source area and the Kozak's private wells, and groundwater assessment near the former pump islands/piping

Location #7: Near BH6, downgradient of the highly contaminated area shown by MW20 and MW21 locations. Suggested well depths, ideally based on a logged borehole, but using available information: Water table, ~elevation 1,550 to 1,555, and 1,530 to 1,535.

Purpose: Provide long-term monitoring of area immediately downgradient of source area and performance monitoring of groundwater quality following source interim measure.

Preferred Drilling Methods:

Logged Soil Stratigraphy remains a significant data gap for this site. A drilling method that provides logged cores is preferred for both appropriate site characterization and well screen placement. This is particularly important because of the vertically complex nature of the hydrostratigraphy and resulting plume. Methods that do not provide logs or use logged cores for informing well screen depths pose a number of risks. These include:

- 1) Drilling and screening through confining or semi confining layers. This likely has already occurred. Direct Sensing Tools and other observations suggest finely inter-bedded layers of silts sand and clay, peat, peat/organics/silt, and a potential lower clay unit occurring sporadically across the site at varying depths.
- 2) Fate and transport mechanisms appear to occur within more transmissive preferential flow paths at varying depths and thicknesses. Screening wells without logged stratigraphy will likely miss worst-case plume conditions at one or more of the proposed well nest locations.

For other detailed monitoring well guidance, please See Attached 2013 EPA Guidance Entitled Design and Installation of Monitoring Wells.